

"Dedicated to Public Service"

# THE RADIATOR



W6RHC  
IRL #8170  
Echolink #322788



<http://www.gearsw6rhc.org>

P.O.Box 508 Chico, CA 95927-0508

Founded: August 13 1939

May, 2014

## Coming Events

### O.A.R.S. GENERAL MEETING

Second Friday, every month, at 7:00 p.m., at St. Paul's Church Parrish Hall, 1430 Pine St., Oroville

G.A.R.S. First Wednesday, each month, General Meeting, Lutheran Church Hall, Artois; 7:00

G.E.A.R.S General Meeting, third Friday each month, at Butte County Search and Rescue Building, Chico. Doors open at 6:30 p.m.

Butte A.R.E.S. MEET: fourth Friday, monthly, at Butte County Search and Rescue Building.

### FCC EXAMS - GEARS VEC

First Sunday of every even numbered month. At the Butte County Search and Rescue Building. Written test at 2:00 p.m. For information or pre-registration call Gene WA6ZRT, (530) 345-3515.

### Club Events:

News and items of interest  
GEARS Calendar...all inside.

Website: [www.gearsw6rhc.org](http://www.gearsw6rhc.org)

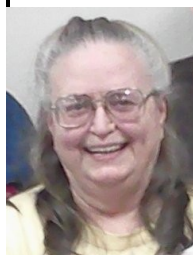
Anna  
President



Picture courtesy EVARC

Horn, kg6zoa,

## The Prez' Says:



Well; at least the 2014 Wildflower is in the books. Mother Nature decided to throw a curveball at us all, with a cold wind, rain (snowflakes in some places), and soggy bikers. Lots of hypothermia among the riders that kept the SAG wagons on the move. It also seems there were more flat tires than in past years. Now I need you operators who served as "Marshalls" and SAG shadows to fill out those report forms so I can get them to Chico Velo so they can look for problem areas before they start planning for next year.

I will be sending out a special bulletin to all members regarding the anniversary tee shirts. It will include the artwork and an order form so we can get our ducks lined up. North State Screenprint is making us a great deal and the shirts are a steal for the quality offered. Shirts will be that bright royal blue, printing will be gold. You have your choice of shirts with pocket for \$9.00 each or without pocket for \$8.00. All this info will be repeated on the order form.

We have an alternate site this year for **Field Day**. Tom Rider has offered his property on Honey Run Road. Much closer to town. Gene W6ZRT went out and surveyed the site for signal strength and it is as good or better than Platt Mountain. Come to the May meeting to get more information. Also find out about the plan for a "sit down" dinner to celebrate our 75th anniversary. I'd better close and get this sent off to Dorothy so she can get it out to all of you. Til next month, or the special bulletin. Anna KG6ZOA

**MINUTES OF GENERAL MEETING**

Date of Meeting: April 18 2014

**PROGRAM:**

Tower presentation by Robert Hess-W1RH

**ATTENDANCE:**

Treasurer not present

**VEC:**

12 people have taken the test of those, 8 passed, 6 new tech and 2 extra.

**TREASURER:**

The Treasurer report: Expenses \$357.80; Ending Balance on Hand \$2956.10.

The report was approved.

**MINUTES:** Approved the minutes from March meeting.**OLD BUSINESS:**

**Wildflower:** All position are filled. Anna will sent out the new list Hams will be monitoring the Sutter Butte repeater if we have problems with 146.085. The frequencies are 146.850 and 147.105 (new PL +110.9 for 147.105 ). Packets will be available by Friday the 25<sup>th</sup> at the ARES meeting.

Steak bake will be at Harmon Park, Oroville. Durham Park is unavailable.

T-shirts art work is done. Pocket and plan available.

**NEW BUSINESS:****ADJOURNMENT:** 21:03 hr.

Dale Anderson,  
Secretary

**Board of Directors Meeting**

Date of Meeting: April 18, 2014

**ATTENDANCE:** Treasurer not present.**OLD BUSINESS:**

T-shirts art work completed. Blue shirt with gold printing. \$9 for pocket and \$8 for no pocket.

Field Day at Centerville this year.

75<sup>th</sup> anniversary at hometown buffet possible.

**NEW BUSINESS:**

IRLP echo link is currently down we will be looking into moving the system.

**MEMBERSHIP APPLICATIONS:**

None.

**ADJOURNMENT:** 21:50 hr.

Dale Anderson,  
Secretary

\*\*\*\*\*

A group of Wildflower participants at Durham Rest Stop



Durham Rest Stop for Wildflower Event

## Scenes from Durham Wildflower Rest Stop



Wildflower Pictures Courtesy of:



KF6HSS-Steve Wolske ,GEARs volunteer

The article published on pages 7-13, was written in 1990 by N7IO-Steve O'Kelley, of Seattle, WA, a member of the Amateur Radio Club "Mike & Key", and was published in Communications Quarterly" magazine.. Mr. O'Kelley and ARRL have most courteously consented to this reprint, . In his QRZ "bio" N7IO states:

" I grew up with a passion for all things magnetic and electrical. By age 10, I was totally hooked on short-wave radio. It was the Internet of the time. And to this day the green magic eye tube still beckons." Now in my 40th year as a communications tech. I collect electronic parts. ...Whenever possible, I sneak off to the dungeon to build things at the workbench or to send dots and dashes on 40m." My goal in life is to someday become a reasonable telegrapher."

**THANK YOU N7IO & THANK YOU ARRL!**



**VEC TESTING**  
2:00 p.m.  
June 1, 2014  
August , 2014

**AT BUTTE COUNTY  
SEARCH & RESCUE  
BUILDING**

**All Classes  
Technician, General and  
Extra.**

**Contact: WA6ZRT-  
Gene Wright  
530-345-3515**



Caps embroidered with your name and your call sign may be ordered by contacting WA6ZRT -Gene Telephone #530 -345-3515



W1RH-Robert Hess is, among his many other activities and accomplishments, Editor/publisher of the El Dorado County Amateur Radio Club newsletter, The Circuit.

**Robert Hess, W1RH, April presentation was about tall broadcast towers with which he has been associated on both the East & West coasts. Mr. Hess is Director of Engineering/Operations/IT for KOVR and KMAX television in Sacramento. His presentation held members spellbound for well over 90 minutes and we would have gladly listened another hour or two!**

**Our banner announcing GEARS 75 Years of Radio Club enthusiast's was unveiled at our April meeting. A group of Licensed Amateur's first meeting was held in August, 1939, and GEARS was officially chartered in March, 1940.**



**This banner was donated by the Christian Radio Station, Chico. We deeply appreciate their generous gift! The station also donated a Public Service Banner which displays information on the many public service functions GEARS performs. At present, KE6VUS-Scott Petersen displays the banners on the side of his impressive "communications van"!**



## Spring Has Sprung: Your Antenna May Have Too

It's good to see Spring arrive in the North Valley. However, as I scribe this in early April it seems winter has returned and it is raining with 42° in Magalia.

By the time you read this in the May issue of The Radiator it should be warm and comfortable outside so you can do some antenna work.

With the warmer Spring time weather, it might be a good idea to go out to take a look at your antennas. Grumpy Old Man Winter can wreak havoc on you antennas. Wind, rain and other devilish winter activities can be stressful on you antenna system. Some of the components of your antennas may have changed since you put them up. That flat SWR you had on your 40 meter inverted V of 1.1:1 is now all of a sudden off the scale on your SWR bridge and in the **Red** zone! A sure indicator something is wrong.

What the @#\$%?

If you have become "antenna-SWR-challenged", it might be a good idea to start anew. New wire, center & leg insulators, support structures, and coax might help bring a smile back next time you check your 40 meter inverted V.

To help you along in this endeavor, below is a listing of frequencies with the lengths in feet & inches. Make sure you add at least a 2' to the measurement so you have enough wire to go through your center & leg insulators to attach to each leg.

### 40 Meter Frequencies & Lengths For Inverted V's

Extra CW: 7.000 - Total Length: 63' 6"  
Per Leg: 31' 9"

Extra Phone: 7.125 - Total Length: 62' 4"  
Per Leg: 31' 2"

Advanced, General, Novice & Tech CW: 7.025 - Total Length: 63' 3"  
Per Leg: 31' 7"

Advanced Phone: 7.125 - Total Length: 62' 4"  
Per Leg: 31' 2"

General Phone: 7.175 - Total Length: 61' 11"  
Per Leg: 30' 11"

The 40 meter antenna is interesting antenna for those hams who like the work 15 meters.

Putting up a 40 Meters inverted V, you can use it on 15 Meters, it is a 3rd harmonic of

40 meters:  $7 * 3 = 21\text{Mhz}$ .

Next month I'll have the lengths for 80 meters.

Stephen, W6AKF

**Tube Of The Month****15E**

At the beginning of World War II, the need for RADAR equipment stimulated the development of many specialized tubes. The large ring oscillators used in ship and shore installations weren't usable on small aircraft. EIMAC had been making small transmitting triodes like the 35T since 1935. About 1938 they made a few UH-15 tubes. No data on that tube has been found. It was very short and had the grid out the top and the plate out the side. The 15E looks like a baseless UH-15. The 20-watt 15E was produced in large numbers and were used in airborne RADARs like the ASB and in IFF (Identification Friend or Foe) units like the BP unit shown in the photo. These tubes could operate up to 600 MHz and in pulse service, operate on 15,000 volts as an oscillator or pulse modulator. Very small but powerful transmitters could be made like the BP that was a tuned filament, tuned grid and tuned plate oscillator. When the aircraft's receiver detected a RADAR search pulse, it would answer with a coded pulse basically saying, "don't shoot me". Pilots were highly motivated to make sure the IFF was properly serviced.

Small rectifiers were also made in this envelope and were designated the 15R and used in some of the same equipment as the 15E. After the War, hams could buy these tubes cheaply, but they were never widely used. Tubes with bases were easier to mount and replace. Recently I found an advertisement where someone was using 15E tubes to make "night-lights".

Visit the museum at [N6JV.com](http://N6JV.com)  
Norm, N6JV



# BUILD A REMOTE DISPLAY FOR YOUR ICOM HF RADIO

*This digital readout is handy for mobile or home use*

**T**hanks to today's compact, solid-state transceivers, many Amateurs are enjoying mobile operation. The newer equipment is easier to use and will fit into almost any vehicle. However, the most common method of installation requires that the user look down and away from the road to tune around the band. A readout on the dashboard will let you watch your frequency and still keep your eye on the road.

You'll also find this display is handy indoors when operating. The completed unit is small and lightweight, and an experienced builder can put it together in a few evenings. Parts are readily available and will cost you about \$50. Best of all, you don't need to modify your rig. The display was designed around the IC-735, but has also been used with the 725, 751A, 765, and 781. It will work with any ICOM radio equipped with a CI-V port.

## Newer radios have a data port

Before discussing how the display works, let's take a look at what the radio does. Most newer radios come with a data port for interfacing to computers or other devices. ICOM radios come with an interface called a CI-V (computer interface five), which allows control over many of the radio's functions.

Whenever you change the radio's frequency using the main dial, a memory button, the VFO A-B button, or the mic up-

down buttons, it automatically sends a ten-byte data message (see **Figure 1**). Each byte contains eight information bits representing two hexadecimal values. The first two bytes are a preamble alerting other devices that data is on the way. Bytes 3 and 4 contain the addresses of the devices receiving and sending the data, respectively. Byte 5 is a control code that specifies the function to be executed; that is, set mode or set band. The next four bytes contain the frequency information. Byte 10 holds the hex value of FD, and marks the end of the message.

Note that, in the examples given, the frequency information is sent in reverse order. The information for 10 and 1 MHz is sent last. Also note that in the data message for

TEN BYTES (8-BIT WORDS)									
FE	FE	00	04	00	00	41	05	07	FD
PREAMBLE		RX	TX	CTL	FREQUENCY DATA			EOM	
		ADR	ADR	CODE					
FREQUENCY IS 7.0541 MHz									

FE	FE	00	04	00	00	31	02	28	FD
PREAMBLE		RX	TX	CTL	FREQUENCY DATA			EOM	
		ADR	ADR	CODE					
FREQUENCY IS 28.0231 MHz									

FE	FE	00	04	00	50	49	23	14	FD
PREAMBLE		RX	TX	CTL	FREQUENCY DATA			EOM	
		ADR	ADR	CODE					
FREQUENCY IS 14.23495 MHz									

**Figure 1.** Examples of the serial data message sent by the radio. Note that the frequency information is contained in bytes 6-9 and is sent in reverse.

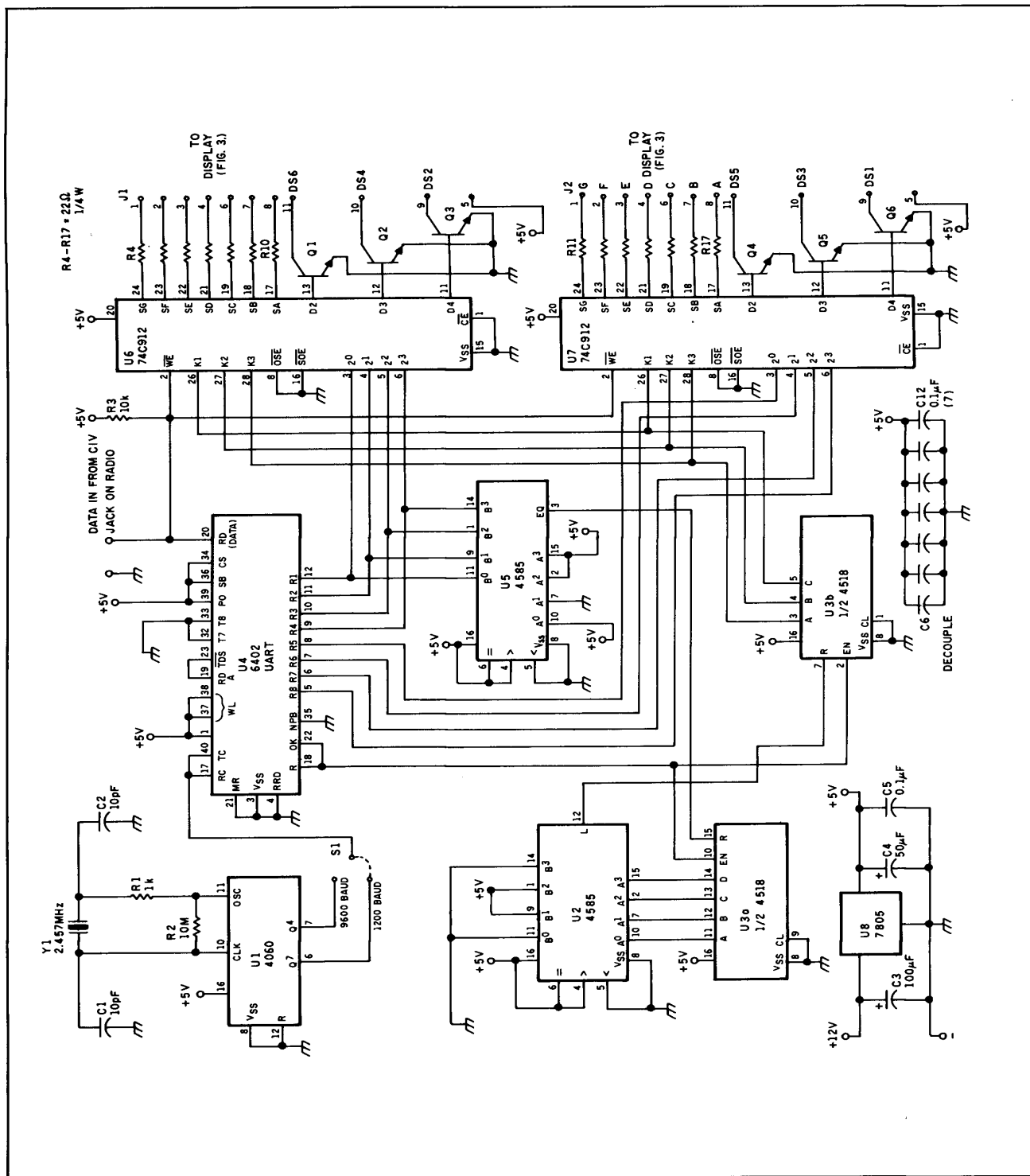


Figure 2. Logic-board schematic.



14 MHz, byte 6 (see **Figure 1**) represents 50 Hz. Information for the 10-Hz digit is always sent, but isn't displayed. The 1-Hz information is a dummy message and is always zero.

This CI-V message is sent to a miniature phone jack on the back of the radio and relays the radio's frequency to the remote display.

## How it works

**Figure 2** shows the display's logic schematic. The design centers around U4, a UART (universal asynchronous receiver transmitter), which receives serial data from the radio and presents it in parallel form. Two binary values are present on pins 5 through 12 for each byte of data the radio sends. When the end-of-message (FD) byte is received in the preceding example, an F (binary 15) appears on pins 5 through 8 and a D (binary 13) on 9 through 12.

## Transmit data

Data from the radio goes directly into the UART on pin 20. When a valid word is received, pin 19 goes high. This signal is applied to pin 23 and tells the UART to load its transmitter register with whatever data is present on the transmit inputs. The transmit data isn't used, but as it's loaded, pin 22 supplies a low to pin 18, which resets pin 19 to a low. Pin 22 is normally high. Thus for every byte of data sent, there will be a falling-edge clock pulse which allows the circuit to count the number of incoming data bytes.

## Counter and comparator

U3 is a dual BCD counter. Pulses from the UART are sent to the enable inputs of each counter. The reset input of U3A is a logic low. This counter increments as data is sent. U2, a magnitude comparator, compares the BCD value from U3A against a preset value of 6. Remember that the frequency information starts with the 6th byte. When the count reaches 6, U3A's count is no longer less than 6, and U2 pin 12 goes low. This enables U3B to begin counting on byte 7.

## Display drivers

U6 and U7 are six-digit display controller-drivers. Data from the UART is fed into these devices as U3B counts up. Information for bytes 6 through 9 is stored in the display drivers. As the CI-V message is sent, the data is clocked into the UART. The data is also connected to the not-write enable lines of the display drivers. As the data line goes low, the display drivers read the parallel data from the UART. Bytes 6 through 9 are stored in registers for digits 1 through 4, respectively. The display drivers decode the information and will drive any common-cathode seven-segment LED display. Segment and digit information are applied to the display board through two ribbon cables which connect to J1 and J2.

Byte 10 contains a value of FD — the end-of-message signal. U5 is another magnitude comparator preset to a D (binary 13). It compares this data against the data from U4 pins 9 through 12. When byte 10 is sent, these two values are equal. U5 pin 3 goes high, resetting U3A. U2 pin 12 then goes high and resets U3B. The circuit remains in this state until a new message is sent.

## Ripple counter

U1 is a 14-bit binary ripple counter. This IC has an internal oscillator whose frequency is determined by crystal Y1. A frequency of 2.457 MHz is divided by U1 to obtain one 16 times the baud rate of the serial data from the radio. ICOM radios are set for 1200 baud at the factory. For this data rate, the UART gets its clock from U1 pin 6. The data can be sent at 9600 baud by changing a plug-in jumper in the radio. If you've made this modification, or plan to do so, make sure to connect the UART clock to U1 pin 7. The display won't function unless the clock frequency is correct.

## Display board

The display board, shown in **Figure 3**, consists of six common-cathode seven-segment LED displays, DS1 through DS6. DS1, 3, and 5 are driven by U7. U6 drives DS2, 4, and 6. Display information is multiplexed. To minimize power consumption, the display controllers turn on just one digit at a time. Notice that DS1 is wired to digit 4 on the controller. Because frequency data from the radio is sent in reverse, it can be displayed in the proper sequence by driving the displays in reverse. Resistors R1 and R2 provide current limiting for the decimal points on DS2 and DS5. If you use displays with left-hand decimal points, connect these resistors to DS3 and DS6. Although they aren't necessary for the operation of the remote display, the decimal points will make it easier to read.

All power is supplied by U8, a 5-volt regulator (**Figure 2**). The circuit shown uses

a 7805 which supplies about 1 A. During operation, the display requires 450 to 500 mA.

## Building the logic board

I built the logic board on perfboard using point-to-point wiring. You can also wire wrap the connections. A board cut to approximately 6 by 4-1/2 inches will accommodate all parts and wiring. **Photo A** shows a breadboard version of the display. **Photos B** and **C** are views of the remote display made using the construction techniques described here.

Use IC sockets for U1 through U7, J1, and J2. This will make it easy to unplug the display board or replace any ICs that fail. **Figure 4** shows a suggested parts placement. Align J1 pin 1 with U6 pin 24 and J2 pin 1 with U7 pin 24 so resistors R4 through R17 can be wired pin for pin between the display drivers and the display board sockets. Use ordinary 16-pin IC sockets for J1 and J2.

Make sure to mount U8 on an outside edge of the logic board, with the metal tab facing out. This IC must have an adequate heatsink. A piece of medium-gauge aluminum around the back and sides of the board will provide both the heatsink and the framework for attaching a housing.

Y1, R1, R2, C1, and C2 (**Figure 2**) should be mounted close to U1. Make the lead lengths as short as possible.

Before wiring the board, make a couple of extra copies of the schematic. As you make each connection, trace it on a copy in red pencil. This will help you keep track of the connections you've made. Wire the regulator circuit first and test it. The output should be 5 volts.

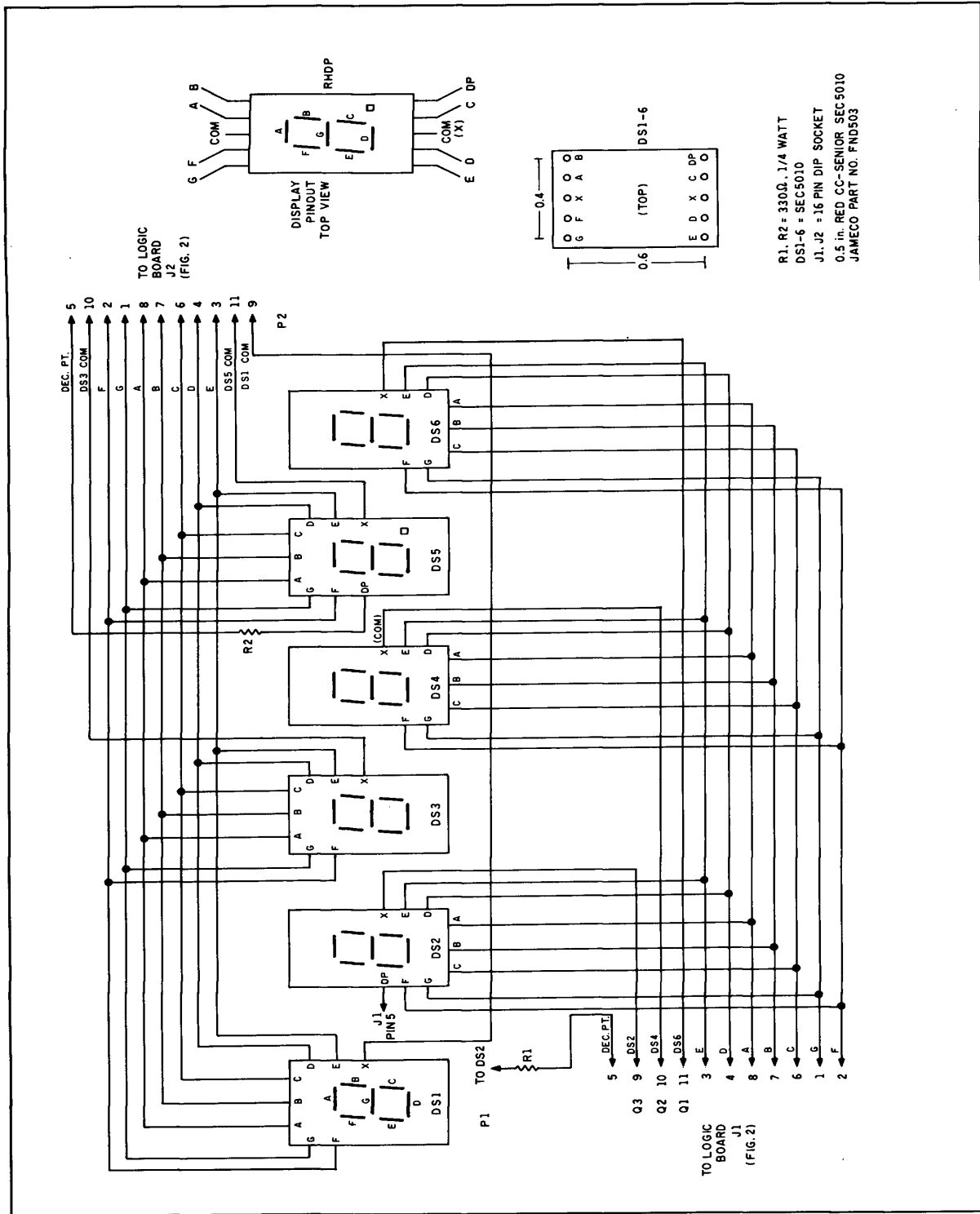


Figure 3. Display-board schematic. The display is built on a Radio Shack 276-170 circuit board.

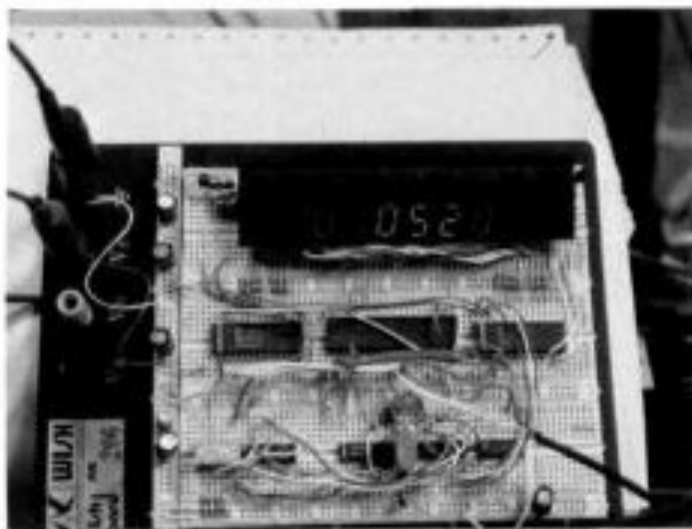
## Building the display board

I built the display board on a Radio Shack 276-170 circuit board. Using a band-saw, trim each edge of the board lengthwise until you have only the 47 rows of foil patterns. The board should measure 6 by 1-1/4 inches. When the displays are centered, there will be two holes available for wiring to each pin. Use these to wire the displays and ribbon-cable connectors.

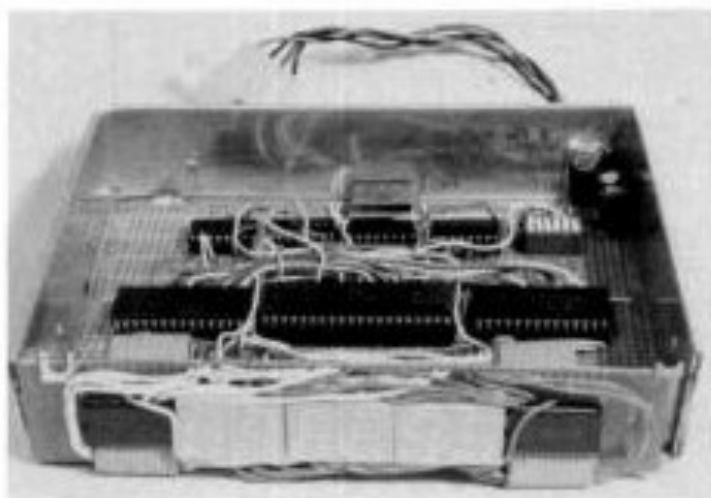
Solder the ribbon-cable connectors directly to the display board. Make the connectors from 4-inch lengths of 16-conductor ribbon and DIP plug connectors similar to Jameco part no. 609-16. You can attach connectors by inserting them into a socket on a breadboard. With the cable properly oriented in the connector, use a small piece of wood and a hammer to gently compress

the connector until it's locked.

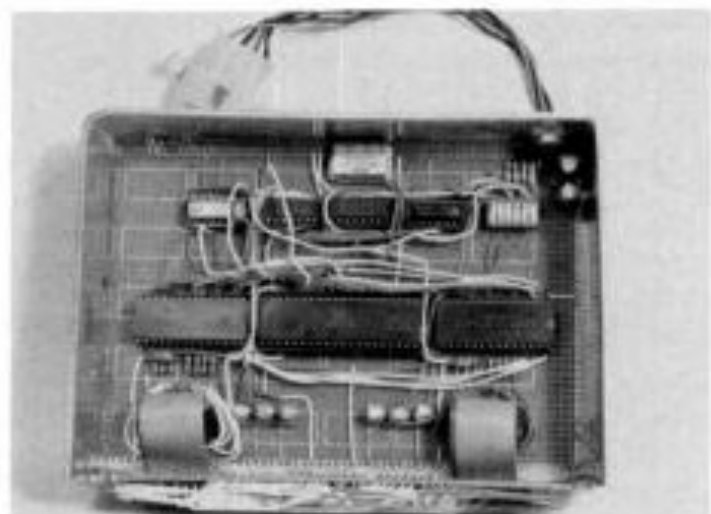
You can use any common-cathode seven-segment display of any size or color. Placing a piece of colored Plexiglas™ in front of the digits will make them easier to read and also hide your wiring. Make sure that the Plexiglas is the color of the LEDs. Most commercial plastics dealers have large enough scrap pieces for sale.



**Photo A.** Breadboard version of the remote frequency display.



**Photo B.** Completed unit showing display board.



**Photo C.** Top view of a completed remote display.

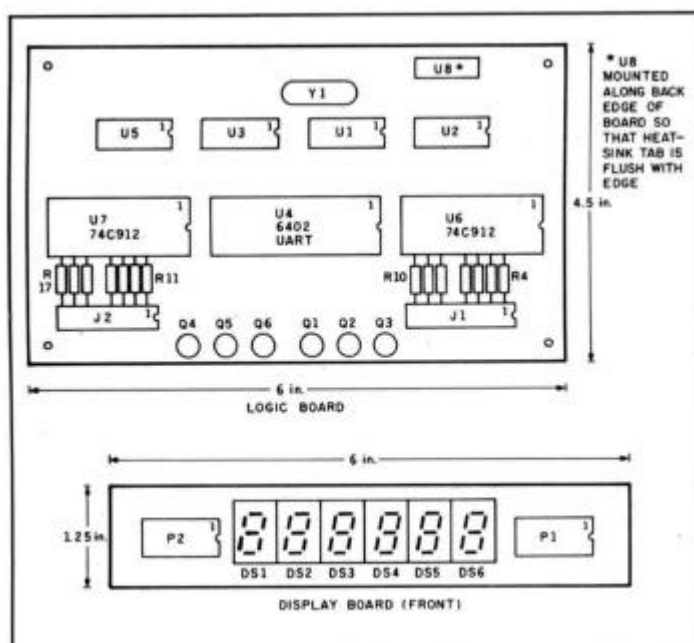


Figure 4. Suggested parts placement for ICs; logic and display boards.

Mount the completed unit in the enclosure of your choice. If you wish, you can make a homemade cable to go between the radio and the remote display. Use shielded wire for the line to the CI-V data jack. You can obtain power from the radio's accessory jack. But if you do, make certain to fuse it at 1A to protect the radio.

## Operation

With the unit completed and wired to the radio, turn the power on. The remote display shows the same frequency as the radio. As you rotate the VFO, or press the memory buttons, the display changes accordingly.

For mobile use, you can fasten the unit to the dashboard with a couple of pieces of Velcro™. This makes the display easy to remove. You might also like to place a small mirror in front of the unit. Light from the display is reflected forward, and you can read the frequency in the windshield.

In my shack, I've wired my radio's frequency up-down functions to a switch near the computer. Because the rig is several feet away, it makes RTTY and AMTOR modes a bit easier to operate. The large LEDs are easy to see from across the room (**Photo D**).



Photo D. Remote display connected to ICOM 735. Case was made from surplus pc board by K7YLM.

Whether your remote display is for mobile or home use, you'll find it a handy accessory and a fun construction project. ■

## PARTS LIST

### CAPACITORS

- C1,C2 10 pF, 500 volts, silver mica  
C3 100  $\mu$ F, 50 volts, electrolytic  
C4 50  $\mu$ F, 50 volts, electrolytic  
C5-C12 0.1  $\mu$ F, 50 volts, monolithic ceramic

### DIODES

- DS1-DS6 FND503 (SEC5010), seven-segment display

### TRANSISTORS

- Q1-Q6 2N2222 NPN silicon

### RESISTORS

- R1 1 k, 1/4 watt  
R2 10 meg, 1/4 watt  
R3 10 k, 1/4 watt  
R4-R17 22 ohms, 1/4 watt

### INTEGRATED CIRCUITS

- U1 4060 14-bit binary ripple counter  
U2,U5 4585 4-bit magnitude comparator  
U3 4518 Dual-binary up counter  
U4 6402 CMOS UART  
U6,U7 74C912 Display controller-driver  
U8 7805 5-volt positive voltage regulator

### MISCELLANEOUS

- Y1 2.457-MHz crystal  
IC sockets  
Ribbon cable  
Dip connectors  
Proto board

### All parts are available from:

Jameco Electronics  
1355 Shoreway Road  
Belmont, California 94002



**The GEARS Newsletter Staff:****Editor and Publisher**.....Dorothy Post**Printing & Distribution** snail mail: Evelyn Weir**Website**...Stephen McDermott W6AKF

The Radiator is a monthly publication of the Golden Empire Amateur Radio Society (GEARS). It is the policy of the Editor to publish all material submitted by the membership provided such material is in good taste, relevant to amateur radio, of interest to GEARS members, and space is available. Please send all submissions to the Editor – Dorothy Post by the last day of the month through the following medium: E-mail: dj@posthouse.us

**Club Officers: (Board of Directors)**

President .....Anna Horn –KG6ZOA

Vice President..... Scott Petersen-KE6VUS

Secretary .....Dale Anderson-KK6EVX

Treasurer.....Lester Mikeworth KG6KUO

Past President .....Gene Wright-WA6ZRT

Director..... Tom Rider-W6JS

Director.....Stephen McDermott W6AKF

Director.....Stephen Wolske-KF6HSS

**Club Meetings****General Meeting Third Friday 6:30 PM****Board Meeting Third Friday 9:00 PM****GEARS Club Net****Tuesdays 8:00 PM 146.850 MHz-PL 110.9****GARS Club Net:Monday,19:30 147.105+Mhz PL 110.0****Sacramento Valley Traffic Net****Nightly 9:00 PM 146.850 MHz-PL 110.9****ARES Nets:****Butte Mondays 20:00 146.850 MHz-PL 110.9****Yuba Sutter Thursdays 19:00 146.085+MHz PL 127.3****Glenn Thursday 19:30 147.105 MHz +PL 110.9****Other Nets:****Sac Valley Section Net—7:00 PM 2<sup>nd</sup> Wed of the month 146.085 MHz+PL 127.3****440 Wed. Night 8:00 PM Wednesday 440.650 MHz****Golden Bear 7:00 PM Daily 3975 kHz****Willie Net 8:00 PM Mondays 1930 kHz****Western Public Service System (WPSS)****Winter 5:00 – 7:30 PM 3952 kHz****Summer 6:00 – 8:30 PM 3952 kHz****ARISS (International Space Station) Uplink 144.490 MHz Downlink 145.800 MHz****Hope-1 satellite: all uplinks are in 145Mhz band:****All downlinks are in 435Mhz band****...California Traffic Net: 3906 KHz nightly @6:00 pm****For traffic listing & @6:30 p.m. for roll call.****North Hills Radio Club's 39th Sacramento Hamfest 2014****Sunday, May 18th - 7:30am - Noon  
Natomas High School SE parking****Directions: I80 - Exit Truxel South - Left on San Juan  
then Left onto Fong Ranch Road - SWAP on the left.****Drawings all day, Main Prize at 11am****#1 - Yaesu FT-60R dual band 5w HT****#2 - MFJ-941E cross needle tuner****#3 - Hustler MX-270 Antenna**

Hey I think it's the DXpedition!



Donuts, Hot Dogs, Drinks

Many Seller Tables

**FREE Parking for Buyer's - Fun for the family. - Great place to shop****Talk-in on 145.190 - 162.2 pl - The BIG Swap in the valley!**

Sunday, June 1, 2014 August 3, 2014	2:00 p.m.	VEC—Exams	Butte Co. Search & Rescue Building 2591 Morrow Lane, Chico	Gene Wright Wa6zrt 530 345 3515
Wednesday May 7, 2014 June 4, 2014	7:00 p.m.	GARS-Glenn Glenn Amateur Radio Society General Meeting, & Amateur Radio Emergency Services	Lutheran Church Hall: 565 Main Street Artois	Joel Wilson kj6dif 530 824 6005
Friday, May 9, 2014 June 13, 2014	7:00 p.m.	OARS Oroville Amateur Radio Society General Meeting	St Paul's Church Parrish Hall 1430 Pine Street Oroville	John Hunt 530 589 4734
Friday May 16, 2014 June 20, 2014	7:00 p.m.	GEARS Golden Empire Amateur Radio Society General Meeting/Elections	Butte County Search and Rescue Building 2591 Morrow Lane Chico	Anna Horn -kg6zoa 530-877-5939

#### REMINDER: PL TONE CHANGED ON 147.105 REPEATER

Having been out of the area for the last two weeks and was just informed that the PL tone has changed on the N6YCK 147.105 repeater. If you have not done so, or did not know of this change, then now would be a good time to up date your radios. The new PL tone is 110.9 Hz and has been verified at my station. Special thanks to Casey W6WCL for notifying me of this possible change. Casey tried last Monday to hold the GARS net but was not able to reprogram his radios on the fly. Thank you Casey for trying to do your part in my absence. There will be a net tonight the 28th of April.

73, Michael, kf6obi

Emergency Coordinator  
Glenn County ACT  
1030 Pacific Avenue  
Willows, CA. 95988-9789  
530-518-3730  
[kf6obi@arrl.net](mailto:kf6obi@arrl.net)  
[kilofox6obi@yahoo.com](mailto:kilofox6obi@yahoo.com)